

REMARKS

Claims 1-47 are all the claims pending in the application.

Claims 1-4, 7-12, and 29-34 have been amended to recite that element (A) is a thermoplastic and water dispersible high molecular weight polymer. This amendment more clearly distinguishes polymer (A) from polymer (B), and it is not related to any rejection over prior art. Support for this amendment can be found at, for example, page 18, lines 19-20, and page 22, lines 24-26, in the original specification.

New Claims 46 and 47 are directed to an adhesive composition, wherein the crosslinkable functional group in the polymer (A) is self-crosslinkable. Support for this additional claimed feature can be found at page 21, lines 1-2, in the original specification.

Entry of the amendments is respectfully requested.

Review and reconsideration on the merits is requested.

Claims 1-45 were rejected under 35 U.S.C. § 112, second paragraph. To overcome this rejection, Applicant has amended the claims to be directed to a thermoplastic and water dispersible high molecular weight polymer (A) and a water-soluble high polymer (B). On page 18, lines 14-20, Applicant distinguishes the phrase “water soluble” from “water dispersible”; and on page 22, lines 24-26, Applicant states that it is favorable that polymer (A) be water dispersible because water can be used as a solvent and contamination into the environment can be decreased.

Claim 1-45 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kadowaki or Sawamoto or Isono, and under 35 U.S.C. § 103(a) as being unpatentable over Arnold in view of either Isono or Sawamoto.

Applicant respectfully traverses these rejections.

Kadowaki, Sawamoto, and Arnold do not teach or suggest Applicant's adhesive composition, as claimed in Claims 1 and 2, as amended. These references do not teach or suggest the claimed adhesive composition having (A) a thermoplastic and water dispersible high molecular weight polymer, (B) a water-soluble high polymer, and (C) a compound having a structure with methylene linked aromatics having a polar functional group. According to Claim 2, the adhesive composition can be compounded with at least one of (D) an aliphatic epoxide compound, (E) a metal salt, (F) a metal oxide, (G) a rubber latex, and (H) a benzene derivative.

Isono discloses hydrophobic polymers using a carboxyl group containing monomer (column 10, on and after line 35), hydrophilic polymers (column 4, line 30, to column 8, line 5 (water soluble polymer disclosed on column 4, line 47)), diphenylmethane diisocyanate (column 13, lines 43 to 44), and epoxy compounds (column 13, on and after line 15).

In contrast with Applicant's claimed invention, Isono is concerned with a lithographic printing material supported on an aluminum substrate and does not teach or suggest that this material is beneficial as an adhesive composition for adhering rubber and fiber. Isono is also entirely different from the claimed invention in its object. Therefore, the claimed invention of Claims 1 and 2 is not rendered obvious by Isono.

With respect to independent Claims 3-4, as amended, and Claims 5-6, the cited references do not teach or suggest at least the claimed aqueous urethane compound. Therefore, the cited references cannot render obvious Claims 3-6.

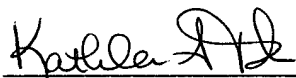
New dependent Claims 46 and 47 are believed to be allowable because the cited references do not teach or suggest the claimed adhesive composition having a thermoplastic and water dispersible high molecular weight polymer, which has a self-crosslinkable functional group.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment under 37 C.F.R. § 1.111
USSN 09/623,140

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Kathleen A. Tobin', is written over a horizontal line.

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 1-4, 7-12 and 29-34 are amended as follows:

1. (Amended) An adhesive composition comprising a thermoplastic and water dispersible high molecular weight polymer (A) containing a crosslinkable functional group as a pendant group and substantially free of carbon-carbon double bonds with a hydrogen radical at its allyl position in the main chain, a water-soluble high polymer (B) and a compound (C) having a structure with methylene linked aromatics having a polar functional group.

2. (Amended) An adhesive composition comprising a thermoplastic and water dispersible high molecular weight polymer (A) containing a crosslinkable functional group as a pendant group and substantially free of carbon-carbon double bonds with a hydrogen radical at its allyl position in the main chain, a water-soluble high polymer (B) and a compound (C) having a structure with methylene linked aromatics having a polar functional group, and further containing at least one component selected from the group consisting of an aliphatic epoxide compound (D), a metal salt (E), a metal oxide (F), a rubber latex (G) and a benzene derivative (H) having two or more (blocked) isocyanate groups.

3. (Amended) An adhesive composition comprising a thermoplastic and water dispersible high molecular weight polymer (A) containing a crosslinkable functional group as a pendant group and substantially free of carbon-carbon double bonds with a hydrogen radical at its allyl position in the main chain and an aqueous urethane compound (I) obtained by reacting an organic polyisocyanate (α) having a structure with methylene linked aromatics, a compound (β) having plural active hydrogens, and a thermally dissociatable blocking agent (γ) for an isocyanate group.

4. (Amended) An adhesive composition comprising a thermoplastic and water dispersible high molecular weight polymer (A) containing a crosslinkable functional group as a pendant group and substantially free of carbon-carbon double bonds with a hydrogen radical at its allyl position in the main chain and an aqueous urethane compound (I) obtained by reacting an organic polyisocyanate (α) having a structure with methylene linked aromatics, a compound (β) having plural active hydrogens, and a thermally dissociatable blocking agent (γ) for an isocyanate group, and further containing at least one component selected from the group consisting of an aliphatic epoxide compound (D), a metal salt (E), a metal oxide (F), a rubber latex (G) and a benzene derivative (H) having two or more (blocked) isocyanate groups.

7. (Amended) An adhesive composition according to claim 1, wherein the thermoplastic and water dispersible high molecular weight polymer (A) is a water-dispersible polymer.

8. (Amended) An adhesive composition according to claim 1, wherein the thermoplastic and water dispersible high molecular weight polymer (A) has a weight average molecular weight of not less than 10,000.

9. (Amended) An adhesive composition according to claim 1, wherein the crosslinkable functional group in the pendant group of the thermoplastic and water dispersible high molecular weight polymer (A) is at least one selected from the group consisting of an oxazoline group, a bismaleimide group, a (blocked) isocyanate group, an epoxy group, an aziridine group, a carbodiimide group, a hydrazino group and an epithio group.

10. (Amended) An adhesive composition according to claim 1, wherein the thermoplastic and water dispersible high molecular weight polymer (A) is an ethylenically addition polymer containing 2-oxazoline group as a pendant group.

11. (Amended) An adhesive composition according to claim 1, wherein the main chain of the thermoplastic and water dispersible high molecular weight polymer (A) comprises an ethylenically addition polymer of units derived from a monomer containing substantially one carbon-carbon double bond, and an addition-reactive carbon-carbon double bond derived from conjugated diene monomer is not more than 10% as a composition ratio in the main chain monomer.

12. (Amended) An adhesive composition according to claim 1, wherein the thermoplastic and water dispersible high molecular weight polymer (A) is a urethane based high molecular weight polymer containing a hydrazino group in its pendant group.

29. (Amended) An adhesive composition according to claim 1, wherein the adhesive composition contains 2-75% of the thermoplastic and water dispersible high molecular weight polymer (A); 5-75% of the water soluble high polymer (B) and 15-77% of the compound (C) on dry weight.

30. (Amended) An adhesive composition according to claim 2, wherein when the adhesive composition contains 2-75% of the thermoplastic and water dispersible high molecular weight polymer (A), 5-75% of the water soluble high polymer (B) and 15-77% of the compound (C) on dry weight, it further contains not more than 70% of the aliphatic epoxide compound (D), not more than 50% of the metal salt (E), not more than 50% of the metal oxide (F), not more than 18% of the rubber latex (G) and not more than 50% of the benzene derivative (H).

31. (Amended) An adhesive composition according to claim 3, wherein the adhesive composition contains 2-75% of the thermoplastic and water dispersible high molecular weight polymer (A) and 15-87% of the aqueous urethane compound (I) on dry weight.

32. (Amended) An adhesive composition according to claim 4, wherein when the adhesive composition contains 2-75% of the thermoplastic and water dispersible high molecular weight polymer (A) and 15-87% of the aqueous urethane compound (I) on dry weight, it further contains not more than 70% of the aliphatic epoxide compound (D), not more than 50% of the metal salt (E), not more than 50% of the metal oxide (F), not more than 18% of the rubber latex (G) and not more than 50% of the benzene derivative (H).

33. (Amended) An adhesive composition according to claim 5, wherein the adhesive composition contains 5-75% of the thermoplastic and water dispersible high molecular weight polymer (A) and 15-77% of the aqueous urethane compound (I) on dry weight.

34. (Amended) An adhesive composition according to claim 6, wherein when the adhesive composition contains 5-75% of the thermoplastic and water dispersible high molecular weight polymer (A) and 15-77% of the aqueous urethane compound (I) on dry weight, it further contains not more than 70% of the aliphatic epoxide compound (D), not more than 50% of the metal salt (E), not more than 50% of the metal oxide (F), not more than 18% of the rubber latex (G) and not more than 50% of the benzene derivative (H).

Claims 46 and 47 are added as a new claims.